

CLAIMS:

1. A catalyst system comprising a catalyst compound and an activator compound wherein the activator compound is represented by the formula:



wherein M is a Group 13 atom attached to a heterocyclic group (JY);

J is a Group 15 or 16 heteroatom contained in Y;

x is the valence of M + 1; and

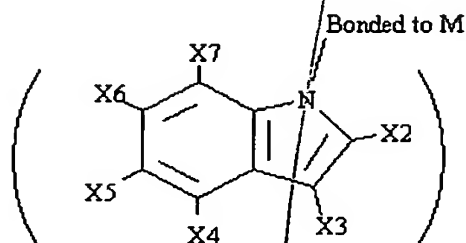
Cat<sup>+</sup> is a cation component;

and wherein one or more positions on at least two heterocyclic groups (JY) is substituted with a halogen atom or a halogen atom containing group.

2. The activator compound of claim 1 wherein M is boron or aluminum.
3. The activator compound of claim 1 wherein J is nitrogen, oxygen, or sulfur.
4. The activator compound of claim 1 wherein each J is nitrogen, each (JY) is independently a pyrrolyl, imidazolyl, pyrazolyl, pyrrolidinyl, purinyl, carbazolyl, or indolyl group, and each J is attached to M.
5. The activator compound of claim 1 wherein each (JY) is independently unsubstituted or substituted with one or more substituent(s) selected from hydrogen, halogen, linear or branched alkyl, alkenyl or alkynyl radicals, cycloalkyl radicals, aryl radicals, aryl substituted alkyl radicals, acyl radicals, aroyl radicals, alkoxy radicals, aryloxy radicals, alkylthio radicals, dialkylamino radicals, alkoxycarbonyl radicals, aryloxy carbonyl radicals, carbomoyl radicals, alkyl- or dialkyl- carbamoyl radicals, acyloxy radicals, acylamino radicals, aroylamino radicals, straight, branched or cyclic, or alkylene radicals.
6. The activator compound of claim 5 wherein one or more of the substituents is halogenated.

7. The activator of claim 1 wherein each (JY) is substituted with a halogen or a halogen containing group.

8. The activator of claim 1 wherein each (JY) is independently represented by the formula:

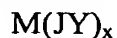


wherein each of X2 to X7 is independently selected from hydrogen, halogen, an alkyl group, a halogenated or partially halogenated alkyl group, an aryl group, a halogenated or partially halogenated aryl group, an aryl substituted alkyl group or a halogenated or partially halogenated aryl substituted alkyl group.

9. The activator of claim 8 wherein each of X4 to X7 is a fluorine atom.

10. The activator of claim 9 wherein X3 is hydrogen, a halogenated or partially halogenated aryl group, an aryl substituted alkyl group, or a halogenated or partially halogenated aryl substituted alkyl group.

11. A catalyst system comprising a catalyst compound and an activator compound wherein the activator compound is represented by the formula:



wherein M is a Group 13 atom attached to a heterocyclic group (JY);

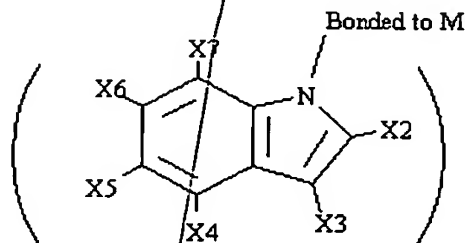
J is a Group 15 or 16 heteroatom contained in Y; and

x is the valence of M; and

wherein one or more positions on at least two heterocyclic groups (JY) is substituted with a halogen atom or a halogen atom containing group.

12. The activator compound of claim 11 wherein M is boron or aluminum.

13. The activator compound of claim 11 wherein J is nitrogen, oxygen, or sulfur.
14. The activator compound of claim 11 wherein each J is nitrogen, each (JY) is independently a pyrrolyl, imidazolyl, pyrazolyl, pyrrolidinyl, purinyl, carbazolyl, or indolyl group, and each J is attached to M.
15. The activator compound of claim 11 wherein each (JY) is independently unsubstituted or substituted with one or more substituent(s) selected from hydrogen, halogen, linear or branched alkyl, alkenyl or alkynyl radicals, cycloalkyl radicals, aryl radicals, aryl substituted alkyl radicals, acyl radicals, aroyl radicals, alkoxy radicals, aryloxy radicals, alkylthio radicals, dialkylamino radicals, alkoxycarbonyl radicals, aryloxycarbonyl radicals, carbomoyl radicals, alkyl- or dialkyl- carbamoyl radicals, acyloxy radicals, acylamino radicals, aroylamino radicals, straight, branched or cyclic, or alkylene radicals.
16. The activator compound of claim 15 wherein one or more of the substituents is halogenated.
17. The activator of claim 11 wherein each (JY) is substituted with a halogen or a halogen containing group.
18. The activator of claim 11 wherein each (JY) is independently represented by the formula:



wherein each of X2 to X7 is independently selected from hydrogen, halogen, an alkyl group, a halogenated or partially halogenated alkyl group, an aryl group, a

halogenated or partially halogenated aryl group, an aryl substituted alkyl group or a halogenated or partially halogenated aryl substituted alkyl group.

19. The activator of claim 18 wherein each of X4 to X7 is a fluorine atom.

20. The activator of claim 19 wherein X3 is hydrogen, a halogenated or partially halogenated aryl group, an aryl substituted alkyl group, or a halogenated or partially halogenated aryl substituted alkyl group.

21. A process for polymerizing olefin(s) comprising contacting a monomer and optionally a comonomer under polymerization conditions with a catalyst system comprising an activator compound represented by the formula:



wherein M is a Group 13 atom attached to a heterocyclic group (JY);

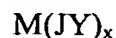
J is a Group 15 or 16 heteroatom contained in Y;

x is the valence of M + 1; and

Cat<sup>+</sup> is a cation component;

and wherein one or more positions on at least two heterocyclic groups (JY) is substituted with a halogen atom or a halogen atom containing group.

22. A process for polymerizing olefin(s) comprising contacting a monomer and optionally a comonomer under polymerization conditions with a catalyst system comprising an activator compound represented by the formula:



wherein M is a Group 13 atom attached to a heterocyclic group (JY);

J is a Group 15 or 16 heteroatom contained in Y; and

x is the valence of M; and

wherein one or more positions on at least two heterocyclic groups (JY) is substituted with a halogen atom or a halogen atom containing group.

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